

CLAIMS:

1. A pressure-sensitive adhesive sheet comprising a composite film comprised by a composition containing a urethane polymer and a vinyl polymer as effective components, a first  
5 film comprising a material different from that of the composite film, and a pressure-sensitive adhesive layer, wherein the pressure-sensitive adhesive sheet has a modulus of 9 N/mm<sup>2</sup> or more and 250 N/mm<sup>2</sup> or less when an oblong piece of the  
10 pressure-sensitive adhesive sheet with a width of 20 mm is bent at a radius of curvature of 3.0 mm.
2. The pressure-sensitive adhesive sheet as claimed in claim 1, wherein the pressure-sensitive adhesive sheet has a modulus of 15 N/mm<sup>2</sup> or more and 250 N/mm<sup>2</sup> or less when an oblong piece  
15 of the pressure-sensitive adhesive sheet with a width of 20 mm is bent at a radius of curvature of 3.0 mm.
3. The pressure-sensitive adhesive sheet as claimed in claim 1, wherein the vinyl polymer is an acrylic polymer.
4. The pressure-sensitive adhesive sheet as claimed in claim  
20 1, wherein the composite film comprises a film obtained by reacting a polyol and a polyisocyanate in a radical polymerizable monomer to form a urethane polymer, coating a mixture of the urethane polymer and the radical polymerizable monomer on the first layer and irradiating a radiation onto the  
25 coating to cure it.
5. The pressure-sensitive adhesive sheet as claimed in claim 4, wherein the radical polymerizable monomer is an acrylic monomer.

6. The pressure-sensitive adhesive sheet as claimed in claim 1, wherein the composite film has a storage modulus at 25°C of less than  $2.0 \times 10^8$  Pa and a storage modulus at 100°C of  $3.0 \times 10^5$  Pa or more.
- 5 7. The pressure-sensitive adhesive sheet as claimed in claim 6, wherein the first film has a storage modulus at 25°C of  $2.0 \times 10^8$  Pa or more.
8. The pressure-sensitive adhesive sheet as claimed in claim 7, wherein the first film has a thickness (t1) of 10  $\mu\text{m}$  or more  
10 and 200  $\mu\text{m}$  or less and the composite film has a thickness (t2) of 10  $\mu\text{m}$  or more and 300  $\mu\text{m}$  or less, and wherein a ratio of the thicknesses (t1/t2) is  $t1/t2 = 0.1$  to 10.
9. The pressure-sensitive adhesive sheet as claimed in claim 1, wherein pressure-sensitive adhesive sheet comprises the  
15 first film on one side of the composite film and a second film on the other side of the composite film.
10. The pressure-sensitive adhesive sheet as claimed in claim 1, wherein the first film has a thickness (t1) of 10  $\mu\text{m}$  or more and 200  $\mu\text{m}$  or less and the composite film has a thickness (t2)  
20 of 10  $\mu\text{m}$  or more and 300  $\mu\text{m}$  or less, and wherein a ratio of the thicknesses (t1/t2) is  $t1/t2 = 0.1$  to 10.
11. A multi-player sheet for use for a pressure-sensitive adhesive sheet, comprising a composite film comprised by a composition containing a urethane polymer and a vinyl polymer  
25 as effective components, and a first film comprising a material different from that of the composite film, wherein the pressure-sensitive adhesive sheet has a modulus of 9 N/mm<sup>2</sup> or more and 250 N/mm<sup>2</sup> or less when an oblong piece of the

pressure-sensitive adhesive sheet with a width of 20 mm is bent at a radius of curvature of 3.0 mm.

12. The multi-layer sheet as claimed in claim 11, wherein the multi-layer sheet comprises the first film on one side of the composite film and a second film on the other side of the composite film.

13. A method of producing a pressure-sensitive adhesive sheet, comprising coating a mixture containing a urethane polymer and a radiation polymerizable monomer on a first film, irradiating a radiation onto the coating to cure it to form a composite film, and forming a pressure-sensitive adhesive layer on the composite film.

14. The method of producing a pressure-sensitive adhesive sheet as claimed in claim 13, wherein the mixture is produced by reacting a polyol and a polyisocyanate in the radical polymerizable monomer to form a urethane polymer.

15. A method of producing a multi-layer sheet, comprising coating a mixture of a urethane polymer and a radical polymerizable monomer on a first film and irradiating a radiation onto the coating to cure it to form a composite film.

16. The method of producing a multi-layer sheet as claimed in claim 15, wherein after the mixture is coated on the first film, a second film is overlaid thereon and the radiation is irradiated above the second film to cure the coating to form a composite film, thereby forming a multi-layer sheet having the first film, the composite film and the second film.

17. The method of producing a multi-layer sheet as claimed in claim 15, wherein the mixture is produced by reacting a polyol

and a polyisocyanate in the radical polymerizable monomer to form a urethane polymer.

18. The method of producing a multi-layer sheet as claimed in claim 15, wherein the method comprises reacting a polyol and  
5 a polyisocyanate in the radical polymerizable monomer to form a urethane polymer, coating a mixture containing the urethane polymer and the radical polymerizable monomer on a base material, irradiating a radiation onto the coating to cure it to form on one side of the first layer a composite film having a storage  
10 modulus at 25°C of less than  $2.0 \times 10^8$  Pa and a storage modulus at 100°C of  $3.0 \times 10^5$  Pa or more.

19. A method of processing a product, comprising applying a pressure-sensitive adhesive sheet to a product to be precision processed and conducting precision processing of the product  
15 in a held and/or protected state, wherein the pressure-sensitive adhesive sheet comprising a composite film comprised by a composition containing a urethane polymer and a vinyl polymer as effective components, and a first film comprising a material different from that of the composite film,  
20 the pressure-sensitive adhesive sheet having a modulus of 9 N/mm<sup>2</sup> or more and 250 N/mm<sup>2</sup> or less when an oblong piece of the pressure-sensitive adhesive sheet with a width of 20 mm is bent at a radius of curvature of 3.0 mm.